

Tl-201 BRAIN SPECT IMAGING IN PREOPERATIVE
SUPRATENTORIAL GLIOMA : IS IT USEFUL IN THE GRADING
OF NONENHANCING CT OR MRI LESIONS ?

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Contrast enhanced MRI is valuable in predicting the histologic grade of gliomas. However, some high grade tumors may not demonstrate any significant enhancement. The purpose of this study was to assess the contribution of Tl-201 brain SPECT in the grading of preoperative glioma and the correlation with contrast enhancement in MRI or CT.

The subjects consisted of 30 patients(pts) with suspected gliomas on contrast enhanced MRI(n=27) or CT(n=3). Tl-201 brain SPECT was performed after injection of 74MBq of Tl-201 using triple head SPECT system. To quantify Tl-201 uptake, TI indices(TI:average pixel counts of tumor ROI / normal contralateral hemisphere) were obtained. Histologic diagnoses were glioblastoma multiforme(GM) in 13; astrocytoma grade III (GIII) in 7, astrocytoma grade II(GII) in 6 and reactive gliosis(RG) in 4.

All 13 pts with GM showed positive Tl-201 uptake (mean TI ; 9.0 ± 4.7), when TI over 2.5 was considered as positive. Four of the 7 pts with GIII were positive(TI ; 4.6~8.5) and the other 3 pts were negative Tl-201 uptake (TI ; 0.8~1.5). All with GII showed negative Tl-201 uptake except one with 4.7 of TI. Three of the 4 pts with RG also showed negative Tl-201 uptake and one showed positive uptake (TI ; 4.9). Overall sensitivity and specificity of Tl-201 SPECT in differentiating high grade glioma were 85% and 80%.

In the correlation with contrast enhancement in MRI or CT, all nonenhancing lesions were negative Tl-201 uptake including 2 lesions with GIII. Nineteen out of the 23 pts with enhancing lesions had positive Tl-201 uptake. Three pts with RG and one with GIII who had enhancing lesions in MRI showed negative Tl-201 uptake.

In conclusion, Tl-201 brain SPECT imaging is a useful method in differentiating the high grade gliomas in contrast enhancing lesions in MRI or CT. It has no additional value in differential diagnosis of nonenhancing lesions.